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B. TENELLA Willd., which is rather widely distributed in the eastern United States, differs from the species just described in having more numerous slightly smaller flowers of a more yellow cast and in well grown individuals borne in many short opposite 1-several-flowered cymes. The corolla is one and a half times the length of the calyx; its segments are narrower and more acute than in *B. iodandra*; the anthers are yellow; the stigma is mostly exserted; and the leaf scales are usually opposite.

Centaurella Moseri Steud. & Hochst. was distinguished from *Bartonia verna* by its still smaller flowers (4^{mm} long) racemosely arranged upon alternate branches, also by its more acutely lobed corolla twice the length of the calyx. The species is represented in herb. Gray by a specimen with the Torrey & Gray label but without data, and by Drummond's specimen from Covington, La., cited in the original description. Both may be merely tall small-flowered specimens of *B. verna*. They differ from *B. iodandra* in stature, inflorescence, considerably smaller flowers, narrower much more acute corolla lobes, and yellow anthers. In formerly classing the two plants together the writer placed too great importance upon the alternation of the leaf scales and the relative length of calyx and corolla—points of resemblance which now seem of less weight than the differences above enumerated, which are probably of specific value.—B. L. ROBINSON, *Gray Herbarium, Harvard University*.

NOTES ON SUNDRY AMERICAN PLUMS.

THE plum section of the genus *Prunus* is of great interest to American botanists and of still greater consequence to American horticulturists. But even after much careful work by some of our best botanical and horticultural students there are still many difficulties in the delimitation and description of species. The horticulturists have sought to avail themselves of the botanists' classifications, but have found them in many respects inadequate and ill-fitting; and these horticultural difficulties have, to a considerable degree, reacted upon our ideas of the botanical classification of plums, bringing in doubts and complications which would not have occurred to the botanists working by themselves. At the present time the botany and the horticulture of this group are inseparably linked. The horticultural

varieties cannot be classified without a knowledge of the botanical species; and these species cannot be fully understood without a wide study of the cultivated varieties. This is my excuse for calling attention here to some of the species, supposedly among the best known in American botany.

PRUNUS AMERICANA Marshall.—In the absence of Marshall's type specimens his original description makes it impossible to say whether he had in hand the western form which now passes generally under this name, or the northeastern *Prunus Americana nigra*. As long as the two are consolidated after the manner of Gray's *Manual* it makes little difference. If, however, the group is to be divided into two species, according to Sargent's *Sylva* and Britton and Brown's *Illustrated Flora*, it is an open question which part should bear Marshall's name.

PRUNUS AMERICANA NIGRA F. A. Waugh.—This question as to whether our common American plums should constitute one species or two has not yet been fully settled. On the one hand we have Sargent, Britton and Brown, Sudworth¹ and others leaning strongly toward the separation of the two groups; while the Gray publications and the numerous followers of Gray, including Bailey, one of our foremost plum students, hold out for consolidation. It seems to me that, were I unacquainted with the cultivated varieties, I would not hesitate to recognize two species; but the many surprising combinations of *Americana* and *nigra* characters seen in the garden, and the impossibility of disentangling all these varieties, make it more convenient to regard Aiton's group as a botanical variety of *Prunus Americana*. I set forth more fully my reasons for taking this view at the time when I proposed to call this group *P. Americana nigra*.²

PRUNUS AMERICANA MOLLIS Torrey & Gray.—Sudworth³ proposes the name *Prunus Americana lanata* for this variety. No explanation is given for this change, and the variety name of Torrey and Gray seems likely to stand. This variety marks the southwestern evolution of the great *Americana* group, as *P. Americana nigra* is a northeastern modification. The extreme forms are quite as distinct, and by them-

¹ Nomenclature of the arborescent flora of the U. S. Bull. 14, U. S. Dept. Agr., Div. Forestry.

² Bull. Vt. Exp. Sta. 53: 60. 1896.

³ Op. cit. 237. 1897.

selves might readily be described as a separate species. T. V. Munson, an experienced horticulturist and botanist in whose observations I have great faith, has taken this view, and has called the group *Prunus australis* (ined.). This variety is supposed to have a distinctively southern distribution, and it does in fact represent exclusively the species at the extreme south; but the woolly pubescent-leaved specimens are mixed with the smooth leaved plants through northern Texas, Oklahoma and southern Kansas, and probably over a much greater range. The horticultural variety Wolf, which belongs distinctively to this group, originated in Wapello county, Iowa,⁴ and the variety Van Buren, also characteristically pubescent, originated in the same state. This matter of distribution is especially interesting in connection with the examination of Scheele's *Prunus rivularis* (see below).

THE HORTULANA GROUP.—The species *Prunus hortulana*⁵ was proposed by a horticulturist chiefly to clear up a cloud of horticultural difficulties. Further study of wild and cultivated plums has convinced Bailey⁶ that this is “a mongrel type of plums, no doubt hybrids” of *Prunus Americana* and *P. angustifolia*. This view appears to me to be much the best one to take of the *hortulana* plums, as I have taken occasion to explain a year ago.⁷ The *hortulana* group is so large and contains so many distinct types that one does not get an intelligent idea of it when it is lumped off as a single species, coordinate with *Prunus Americana* and *P. angustifolia*. As soon as we view it as a group of hybrids we can account for the several more or less distinct subgroups. The best marked types in the *hortulana* group are the Wildgoose type, the Wayland type (see below), and the Miner type (*P. hortulana Mineri* Bailey). The relations of these groups I have already discussed in the article referred to above. One group, however, is of special interest. This is the one which I have characterized as the Wayland group.⁸ Credit is due to T. V. Munson⁹ for calling attention to the distinctness of this group, and for referring it to Scheele's *Prunus rivularis*. I have given in another article¹⁰ my

⁴ L. H. BAILEY, Bull. Cornell Exp. Sta. 38: 14.

⁵ L. H. BAILEY, Garden and Forest 5: 90. 1892.

⁶ Cornell Exp. Sta. Bull. 131: 170. 1897.

⁷ Garden and Forest 10: 340. 1897.

⁸ Ann. Rep. Vt. Exp. Sta. 10: 103. 1897.

⁹ Catalogue, 1896.

¹⁰ Garden and Forest 10: 350. 1897; see also Ann. Rep. Vt. Exp. Sta. *loc. cit.*

reasons for including the varieties of this group with the great company of *hortulana* hybrids and for rejecting the supposition of a *Prunus rivularis* derivation. Further investigation confirms me in my earlier view, but leads me at the same time to the belief that Munson was correct in identifying the Wayland varieties with Scheele's *P. rivularis*. In other words, I am convinced that *P. rivularis* Scheele is nothing more than one of the more distinct subdivisions of the multi-form *hortulana* group. A part of the argument for this conclusion is already set forth in the article referred to, giving the geographical origin of the varieties of the Wayland subgroup. That is, such varieties as Golden Beauty, coming from the range of the supposed *P. rivularis*, and almost certainly identical with that supposed species, are conspicuously like such other varieties as Cumberland, Garfield, Kanawha, Leptune, Missouri Apricot, Moreman, Sucker State, and Wayland, which have originated respectively in the states of Tennessee, Ohio, Kentucky, Arkansas, Missouri, Kentucky, Illinois, and Kentucky. All these varieties agree fairly well with Scheele's description of *P. rivularis*. If there were such a species it would be almost impossible to exclude all these varieties, and quite impossible to include them all, because we cannot suppose a distribution of *P. rivularis* through the states named.

Moreover, an examination of the material in herbaria passing as *Prunus rivularis* seems to support this conclusion. Scheele founded his *P. rivularis* upon Lindheimer's 389 in *Exsiccata Flora Texana*. Through the kindness of the curator I have been enabled recently to examine the material in the National Herbarium, including a specimen of Lindheimer's 389. This specimen is not an extra good one, but shows flowers, fruit, leaves, and some small twigs, giving most of the characters fairly well. It is a trifle Chicasaw-like in general appearance, but answers nicely in every particular to Bailey's description of *P. hortulana*. It also looks most like Golden Beauty and some other varieties belonging distinctly to the Wayland group. This specimen was collected in 1846, and it seems strange that a greater number of specimens have not been collected since then.

Another specimen in the National Herbarium is 187 of Elihu Hall, and was collected at Dallas in 1872. This one is still more easily referred to the *hortulana* group. In fact it conforms much more readily to our ideas of *P. hortulana* as represented in literature and in herbarium material than do many of the cultivated varieties which

have gone unquestioned into this group. Wright's 181 in *Planta Wrightianæ Texano-Neo-Mexicanæ* is referred to *P. rivularis* by Gray,¹¹ who says, however, "verging to *P. Americana*;" and this specimen in the National Herbarium is transferred to *P. Americana* "fide Sargent, 1892," which shows how equivocal are the current notions of *P. rivularis*. This is, however, a very interesting and puzzling specimen having broad oval leaves, with irregular shallow obtuse obscurely glandular crenulations. Still another specimen which has sometimes been referred to *P. rivularis* is one collected by J. Wolf in Illinois in 1875. This is quite doubtful. In the National Herbarium it is marked "*P. hortulana*, fide Sargent, 1892." The leaves of this are small and shining, with a fine downy pubescence on the young twigs and petioles. But this pubescent character, which is important in the Wayland group, is not at all so marked as among the Wayland varieties proper. Another specimen, sometimes named *P. rivularis*, is that of Thos. Bassler from Manhattan, Kan., 1883. This is a poor specimen, with only flowers and twigs, but is unquestionably *P. Americana*.

The characters of the Wayland varieties, as well as of the *Prunus rivularis* material, are such as would suggest hybridity between *P. angustifolia* and *P. Americana mollis*. Especially the pubescent nature of the petioles and of the veins on the backs of the leaves indicates the parentage of *P. Americana mollis*. The general shape of the leaves and the character of the serratures also point in the same direction. As already pointed out, the distribution of the Wayland varieties almost exactly corresponds to the joint distribution of *P. angustifolia* and *P. Americana mollis*. T. V. Munson, in private correspondence assures me that, in extensive travels through western Texas, he has quite uniformly found an abundance of Scheele's *P. rivularis*, *i. e.*, plums of the Wayland class, and, distributed everywhere with these, *P. australis* (*P. Americana mollis*) and *P. angustifolia*. He writes me also that he has grown hundreds of seedlings from this wild stock along with the cultivated varieties and their seedlings, and that the group is quite homogeneous and distinct.

Thus it seems probable that Scheele, who, perhaps, had no personal acquaintance with plums in America, and who had a comparatively small amount of material in Lindheimer's 389, gave specific rank to a group which American botanists would not have mentioned separately, and which American horticulturists would have classified immediately

¹¹ Pl. Wright. Tex.-Neo-Mex. 67. 1850.

by reference to recognized pomological groups. If, however, *P. rivularis* is to stand, the date of its publication would give it precedence over *P. hortulana* for that part of the *hortulana* plums represented; but in view of the tendency to abandon *P. hortulana*, this does not appear to be of very much consequence.

It is interesting to note in this connection that *Prunus Texana*,¹² which Scheele erected at the same time as *P. rivularis* from some more Texas material, has not been heard from since, except to be consolidated with the latter by Sereno Watson.¹³

PRUNUS WATSONI Sargent.—Quite a number of cultivated forms of this species, some of them named and catalogued by nurserymen, have recently come under my observation.¹⁴ I have also examined a quantity of herbarium material. It appears to me that it will be very difficult to draw the line between this species and *P. angustifolia*. Even when Sargent's unabridged descriptions of the two species are placed in parallel columns and diligently scrutinized they will be found to yield but a single character of distinction. The calyx lobes of *P. angustifolia* are said to be glandular-ciliate; while of *P. Watsoni* they are said to be eglandular-ciliate; but this distinction cannot be safely applied to the cultivated varieties, as I have had sufficient opportunity to observe. *P. Watsoni* is usually dwarfer, with more zigzag ashy-gray twigs, and with more appearance of thorniness, and usually has smaller leaves with more finely crenulate margins; but none of these characters will serve for critical discrimination. It may even be found necessary in the future to abandon *P. Watsoni* or to reduce it to a variety of *P. angustifolia*; but for the present this species, name, and description seem to be useful in calling attention to a neglected and very interesting group of native plums.—F. A. WAUGH, *Experiment Station, University of Vermont*.

TWO NOTEWORTHY OAKS.

(WITH PLATES V AND VI)

I. A NEW HYBRID.

FOR three seasons I have been observing an oak which grows in the damp sandy woods near the village of Thornton, Ill., six miles

¹² Beiträge zur Flora von Texas. Linn. 21: 593. 1848.

¹³ Bibl. Index. N. A. Bot. 307.

¹⁴ "The Sand Plums," Country Gentleman 63: 68. 1898.